

Overview of the Clean Water Act and the National Pollutant Discharge Elimination System (NPDES) Program

Statutory Evolution of the NPDES Program

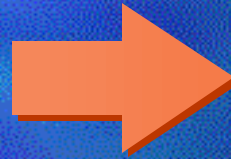
1800's - 1970 → **1972** → 1976 → 1977 → 1979 → 1987

- Federal Water Pollution Control Act Amendments (Clean Water Act)

- Established NPDES, pretreatment, and construction grants programs

NPDES Statutory Framework

- All “point” sources
- “Discharging pollutants”
- Into “waters of the U.S.”



**Must obtain an
NPDES permit
from EPA or an
approved State**

Activities Regulated Under the NPDES Program:

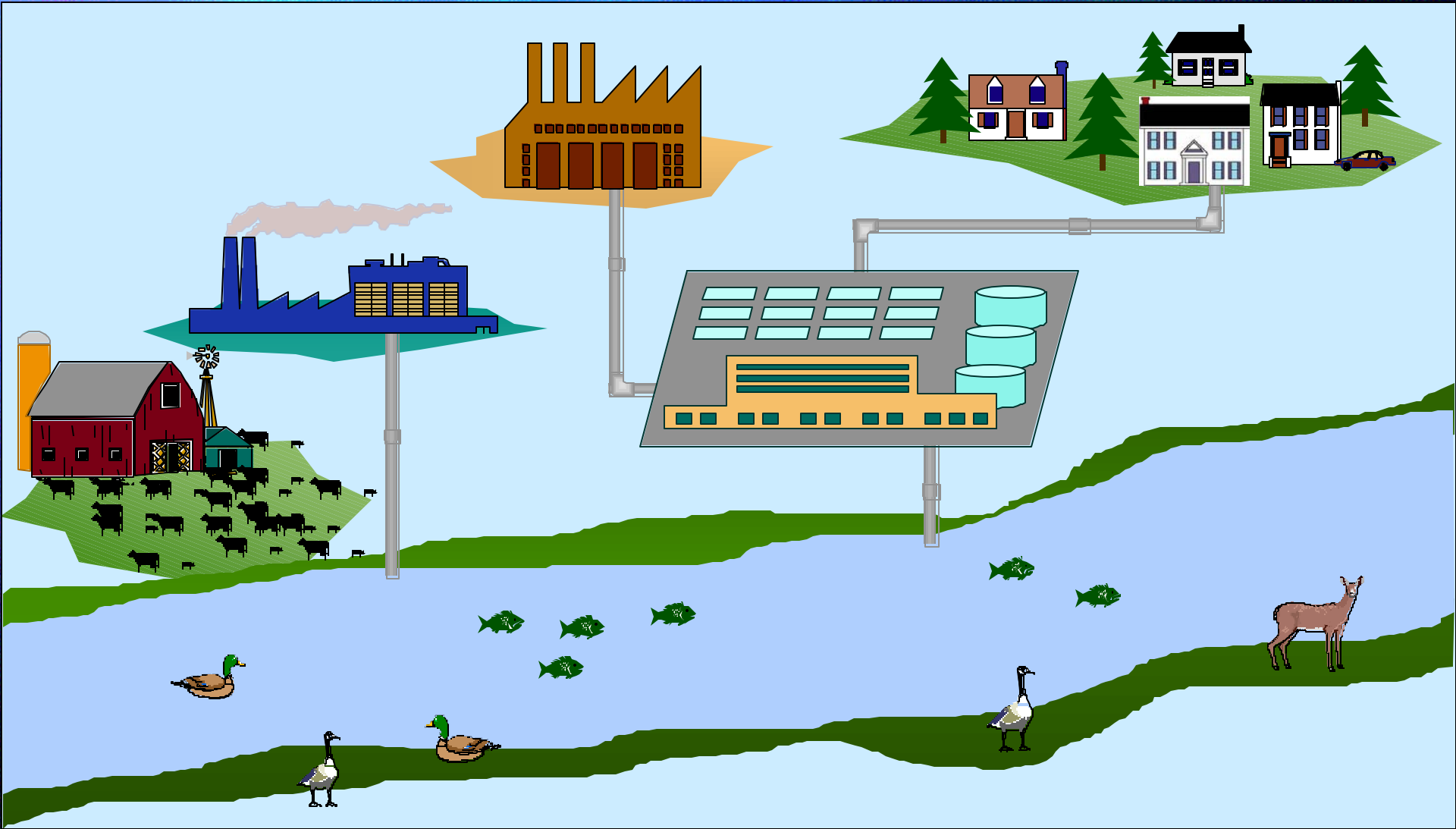
■ Direct Discharges:

- Industry, Municipalities (POTWs), Stormwater systems, CAFOs

■ Indirect Discharges:

- Covered under NPDES Pretreatment program (discharge to POTWs)

NPDES Permit Program



Delegation of Regulatory Authority-Region VII

	<u>NPDES¹</u>	<u>Pretreatment</u>
Iowa	Yes	yes
Kansas	yes	no
Missouri	yes	yes
Nebraska	yes	yes ²
Tribal Lands	no	no

Region VII NPDES Permits: 8,744; (includes 386 MAJORS), (2214 are municipal, 6407 industrial, 10 federal, 73 “other”)

² NDEQ is the Control Authority for all Nebraska PT permits.

NPDES Implementation

- Before State/Tribal program approval:
 - EPA issues permits
 - EPA conducts compliance and monitoring activities
 - EPA enforces
- After State/Tribal program approval:
 - States implement as above
 - EPA role = oversight
 - Grants for operation of water pollution control program
 - Administrative, technical and legal support and training
 - Enforcement as necessary

What is a Permit?

- It is a license . . .
 - Issued by the government to persons conducting business in the United States
 - Granting permission to do something which would be illegal in the absence of the permit
- There is no right to a permit and it is revocable for cause (noncompliance)
- For our purposes, NPDES permit is license to discharge

Who Must Apply for a Permit?

- Anyone who discharges pollutants or proposes to discharge pollutants to waters of the U.S.
 - Operator vs. owner
- Exceptions include:
 - Dredged or fill materials (404 permit required)
 - Some marine vessel discharges
 - Non-point source runoff
 - Indirect dischargers to POTWs

Permit Components

■ Effluent Limitations

- Technology-Based
- Water Quality-Based

■ Monitoring & Reporting Requirements

- Sample frequency, type, locations

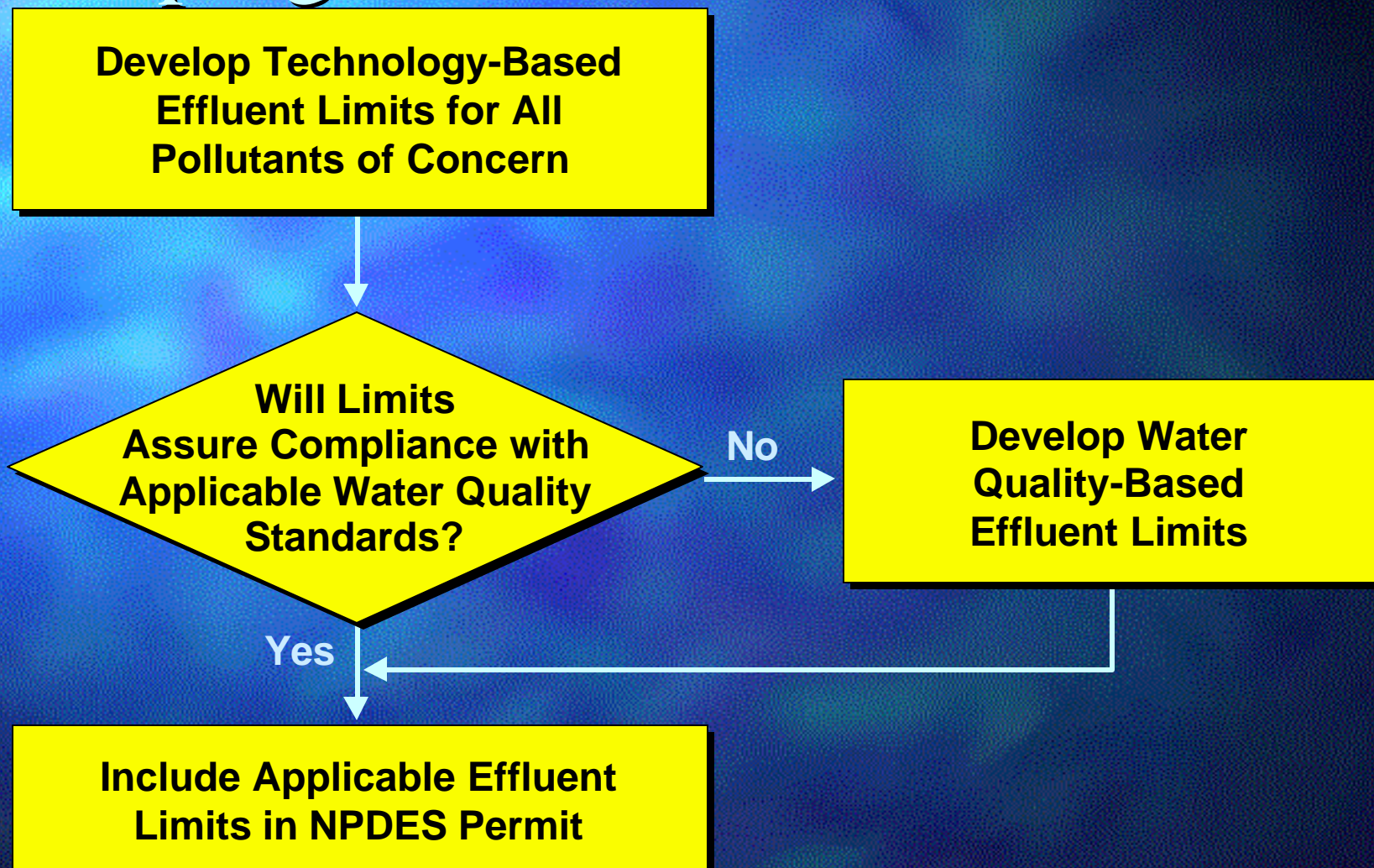
■ Standard Conditions

- general prohibitions, duty to mitigate, etc.

■ Special Conditions

- e.g., compliance schedules, CSO control measures, sewage sludge disposal requirements, BMPs

Developing Effluent Limitations



Technology-Based Requirements

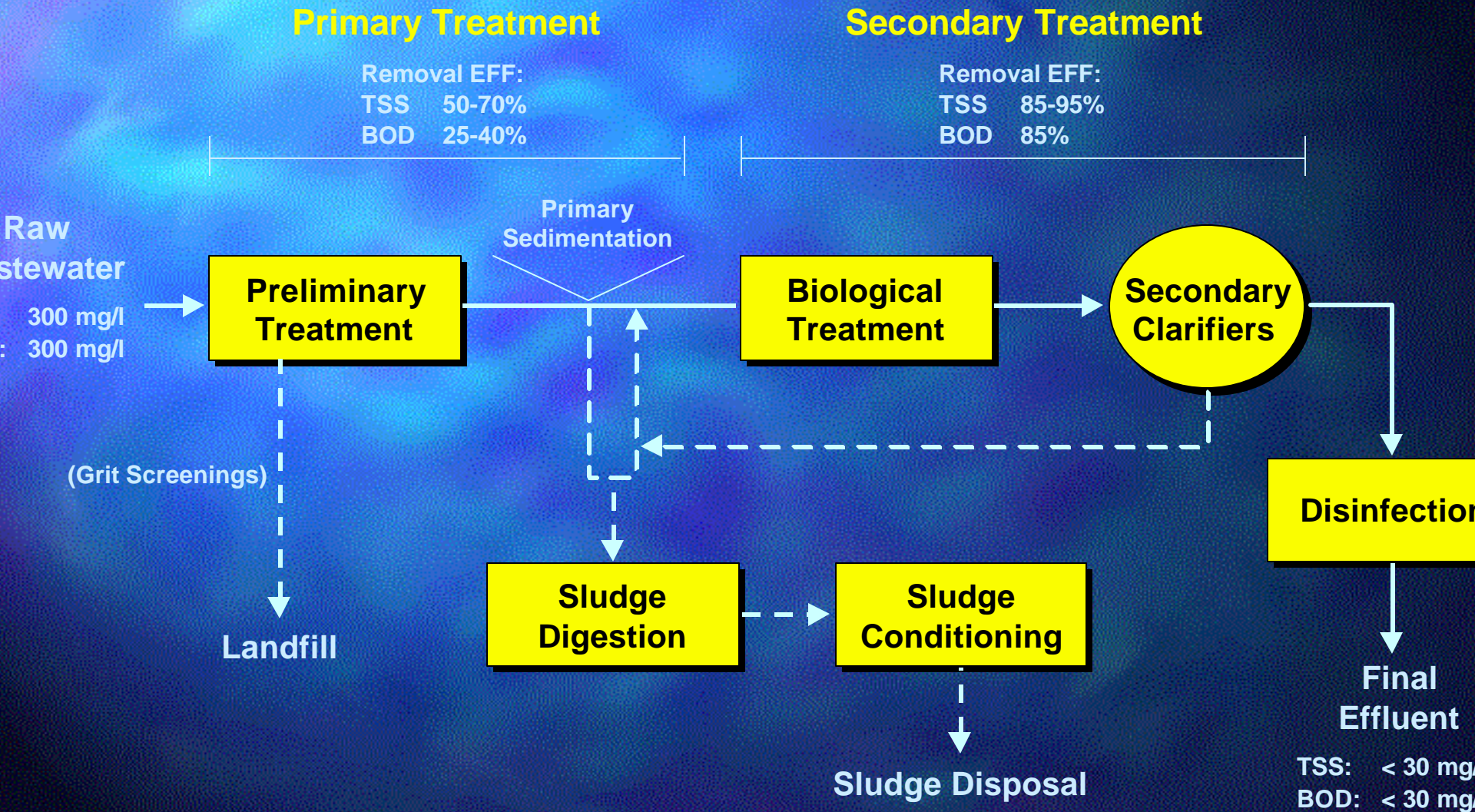
■ Purpose

- Establish minimum level of pollutant controls for all point source dischargers
 - Conventional pollutants
 - Non-conventional pollutants
 - Toxic pollutants
- Provide equity among dischargers within categories

Technology-Based Requirements

- implemented through NPDES permits
- National technology-based standards are available
 - Secondary treatment standards for municipal
 - Effluent limit guidelines for non-municipal
- In the absence of National standards
 - Technology-based requirements developed on a case-by-case basis

Flow Diagram of a Wastewater Treatment Plant



Effluent Limitations Guidelines

■ Definition

- Effluent limitations guidelines are National standards prescribing allowable discharges of pollutants from industrial point source categories corresponding to various levels of treatment or control technologies

■ Scope

- Guidelines are established for most primary and some secondary industries

AGENCY (Continued)

CHAPTER N—EFFLUENT GUIDELINES AND STANDARDS

400 [Reserved]		431 The builders' paper and board mills point source category	249
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408 Canned and preserved seafood processing point source category	105	440 Ore mining and dressing point source category	351
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412 Feedlots point source category	193	454 Gum and wood chemicals manufacturing point source category	384
413 Electroplating point source category	197	455 Pesticide chemicals	388
414 Organic chemicals, plastics, and synthetic fibers.	212	457 Explosives manufacturing point source category ...	427
415 Inorganic chemicals manufacturing point source category	234	458 Carbon black manufacturing point source category	428
416 [Reserved]		459 Photographic point source category	432
417 Soap and detergent manufacturing point source category	293	460 Hospital point source category	433
418 Fertilizer manufacturing point source category ..	330	461 Battery manufacturing point source category	434
419 Petroleum refining point source category	345	463 Plastics molding and forming point source category	467
420 Iron and steel manufacturing point source category.....	380	464 Metal molding and casting point source category ..	473
421 Nonferrous metals manufacturing point source category	444	465 Coil coating point source category	520
422 Phosphate manufacturing point source category	631	466 Porcelain enameling point source category	529
423 Steam electric power generating point source category.....	640	467 Aluminum forming point source category	537
424 Ferroalloy manufacturing point source category	649	468 Copper forming point source category	579
425 Leather tanning and finishing point source category.....	5	469 Electrical and electronic components point source category	597
426 Glass manufacturing point source category	26	471 Nonferrous metals forming and metal powders point source category	604
427 Asbestos manufacturing point source category	47		
428 Rubber manufacturing point source category	61		
429 Timber products processing point source category	84		
430 The pulp, paper, and paperboard point source category.....	102		

Water Quality-Based Requirements

- Clean Water Act Sec. 303 requires States to adopt water quality standards
- Dischargers required to achieve statutory requirements to meet water quality standards
- Used to supplement technology-based effluent limits

Water Quality Standards

- A water quality standard defines the water quality goals of a waterbody, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. (40 CFR Part 131)

Establishment of Water Quality Standards

- All “waters of the U.S.” have water quality standards
- Water quality standards are adopted for each waterbody in a State
 - Segments of waterbodies
- States are responsible for establishing water quality standards
 - 40 CFR Part 131
 - Revised every 3 years
 - EPA has oversight

Components of a Water Quality Standard

■ Designated Uses

- E.g.: Public water supply, Fish and wildlife propagation, Recreation, Agricultural, Industrial, Navigation

■ Water quality criteria

- Numerical, e.g.: dissolved oxygen, metals, nutrients
- Narrative-“Free from...” toxics, objectionable color, odor, taste, turbidity, etc.

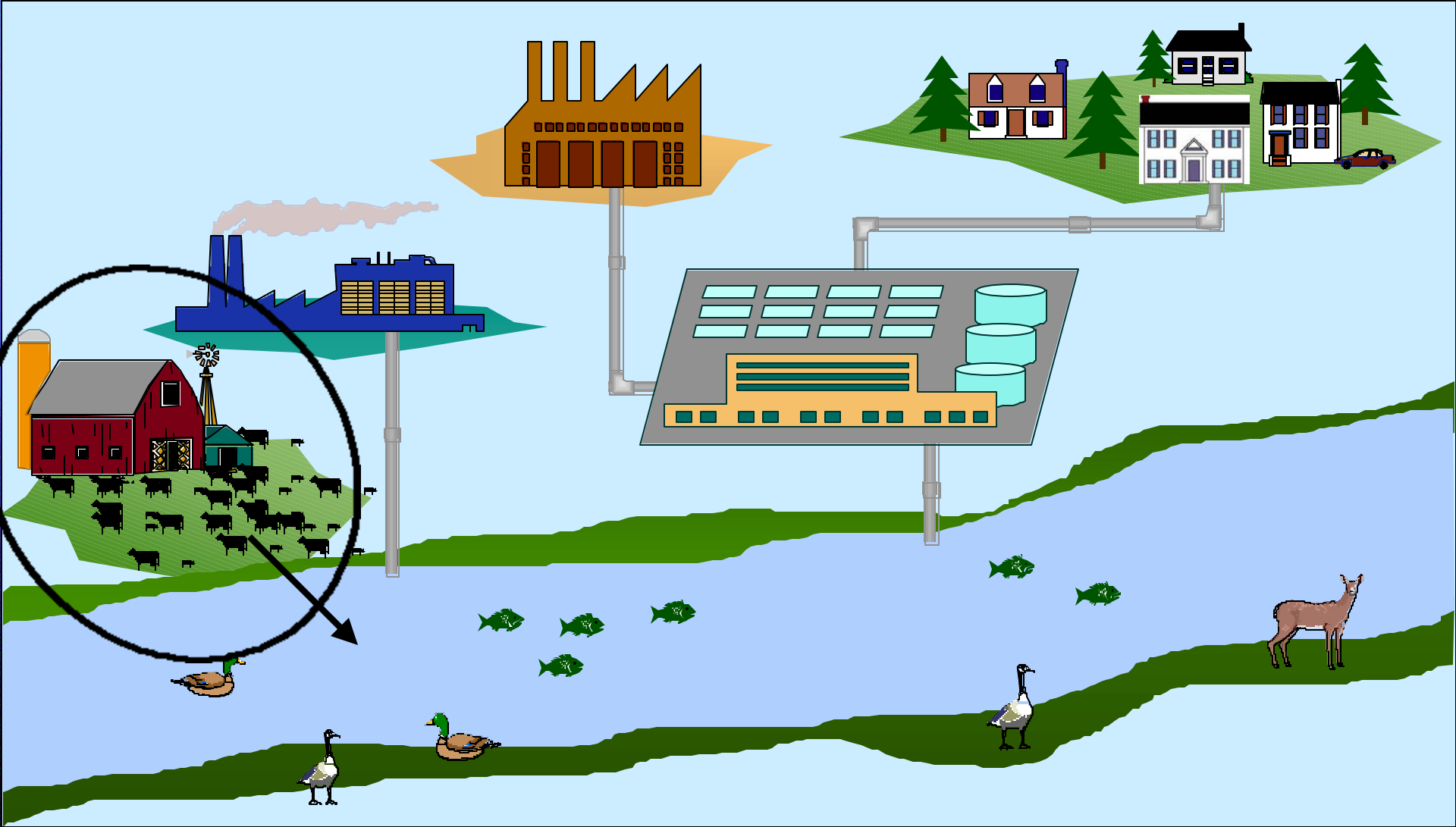
■ Antidegradation policy

CAFOs:

Concentrated
Animal
Feeding
Operations



CAFOs



AFO: Facilities that stable, confine, and feed or maintain animals for a total of 45 days or more in any 12 month period, and,

- Do not sustain crops, vegetation, forage growth, or post harvest residues in the normal growing season over any portion of the facility

Existing NPDES Regulations:

- CAFO Definition:

 - > 1,000 Animal Units (AU s)

- E.g., 1000 AU s

 - = 1000 beef cattle

 - = 700 dairy cattle

 - = 500 horses

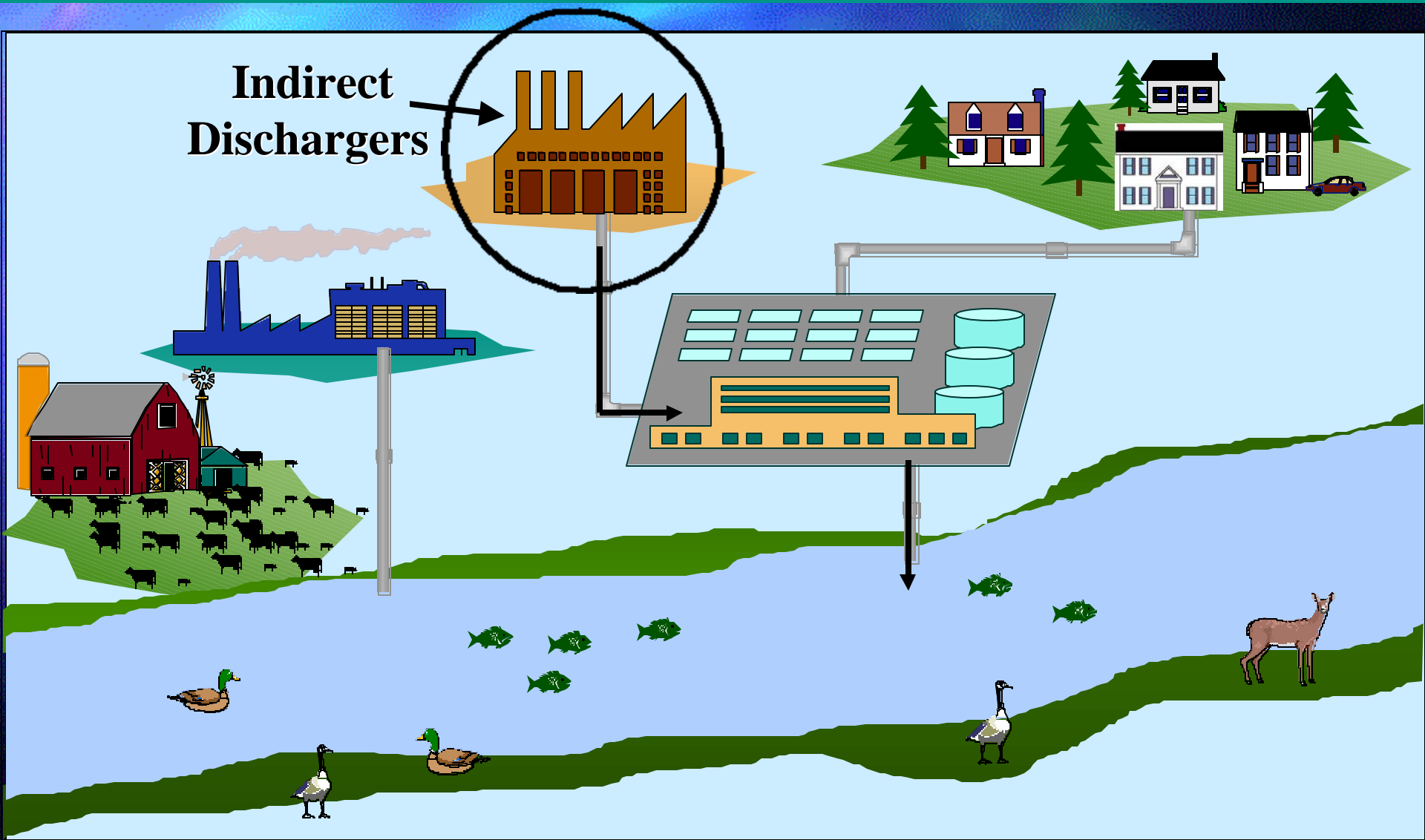
 - = 2,500 swine > 55 lbs.

Effluent Guideline 40 CFR 412.13

Existing Requirements

- No discharge of process waste water pollutants, except
- Whenever catastrophic or chronic rainfall events cause an overflow from a facility designed, constructed, and operated to contain all process generated waste waters plus the runoff from a 25-yr, 24-hr rainfall

NPDES Permit Program



National Pretreatment Program

- Major goal is controlling discharges in order to:
 - Prevent interference with POTW processes
 - Prevent pass through of pollutants into waters of the U.S.
 - Protect sludge management options
- Additional goal: Promote Pollution Prevention measures

National Pretreatment Program

Scope:

- 270,000 significant industrial users (IUs) nationwide.
- 31,842 permitted IUs.
- 14,914 categorical IUs.
- ~ 1,500 cities with authorized PT programs. (More have local limits for sewer users.)

NPDES Pretreatment Program

- The State is the **Permitting Authority (PA)** in Nebraska, Iowa, and Missouri.
 - issues permits to POTWs
 - (in KS, EPA Region 7 is PA)
- Permittee (POTW) is the **Control Authority (CA)**
 - Primary role in monitoring and enforcement of industrial users
 - Exception: in Nebraska, NDEQ is the PA **and** the CA

Regulatory Requirements – General Pretreatment Regulations

- Requirements for POTW and State programs (40CFR Part 403)
- Industrial and POTW reporting requirements
- General Prohibitions (Part 403.5)
- Effluent Limitations Guidelines (40 CFR 405-471)
 - Including categorical pretreatment standards

General Prohibitions:

(40 CFR Part 403.5)

- discharge of substances in quantities which can cause:
 - ***Interference*** or ***Pass-Through*** at the POTW
 - fire or explosion hazard
 - corrosive structural damage (in no case should pH be < 5)
 - obstruction of flow by solids or viscous substances
 - toxic gases vapors or fumes which can lead to acute worker H&S problems
 - excessive heat which can inhibit treatment processes (influent @ POTW > 104 degrees)

Effluent Guidelines & Standards

- Pretreatment standards have been published for many of the 51 industrial categories regulated @ 40 CFR Parts 405-471.

AGENCY (Continued)

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Am I covered under the Pretreatment Regulations?

- YES - If you are a Significant Industrial User (SIU)
 - I.e., if you fall under one of the categories for which pretreatment standards have been established (@ 40CFR 405-471),
 - If you discharge 50,000 gpd or contribute 5% of the hydraulic or organic load to the POTW, or
 - If your discharge is designated by the PA or CA (having the potential to impact the POTW).

What if I am not an SIU?

- You are still subject to the general prohibitions @ 40 CFR Part 403.5.
- You are subject to any local limits imposed through a sewer use ordinance (SUO).
 - Contact your POTW for a copy.
- Talk with your local POTW for any restrictions on wastewater discharges from e.g., laboratories, food services, maintenance shops, or laundries.

Where do the drains lead to?

- Waters of the U.S.?....NPDES Permit required
- POTW?...PT permit may be required
- Septic tank?...industrial wastewaters not allowed!
- Any of the above...Disposal of hazardous wastes must conform with RCRA regulations! (exclusions: 40 CFR Part 261.4)



STORMWATER

'99 11 5

Clean Water Act Amendments of 1987

- Specify storm water permitting requirements covering:
 - 11 categories of industrial activities (including construction)
 - Municipal Separate Storm Sewer Systems (MS4s)

What is an MS4?

A municipal separate storm sewer system (MS4) is:

A conveyance or system of conveyances... owned by a State, city, town, or other public entity that discharges to waters of the U.S. and is:

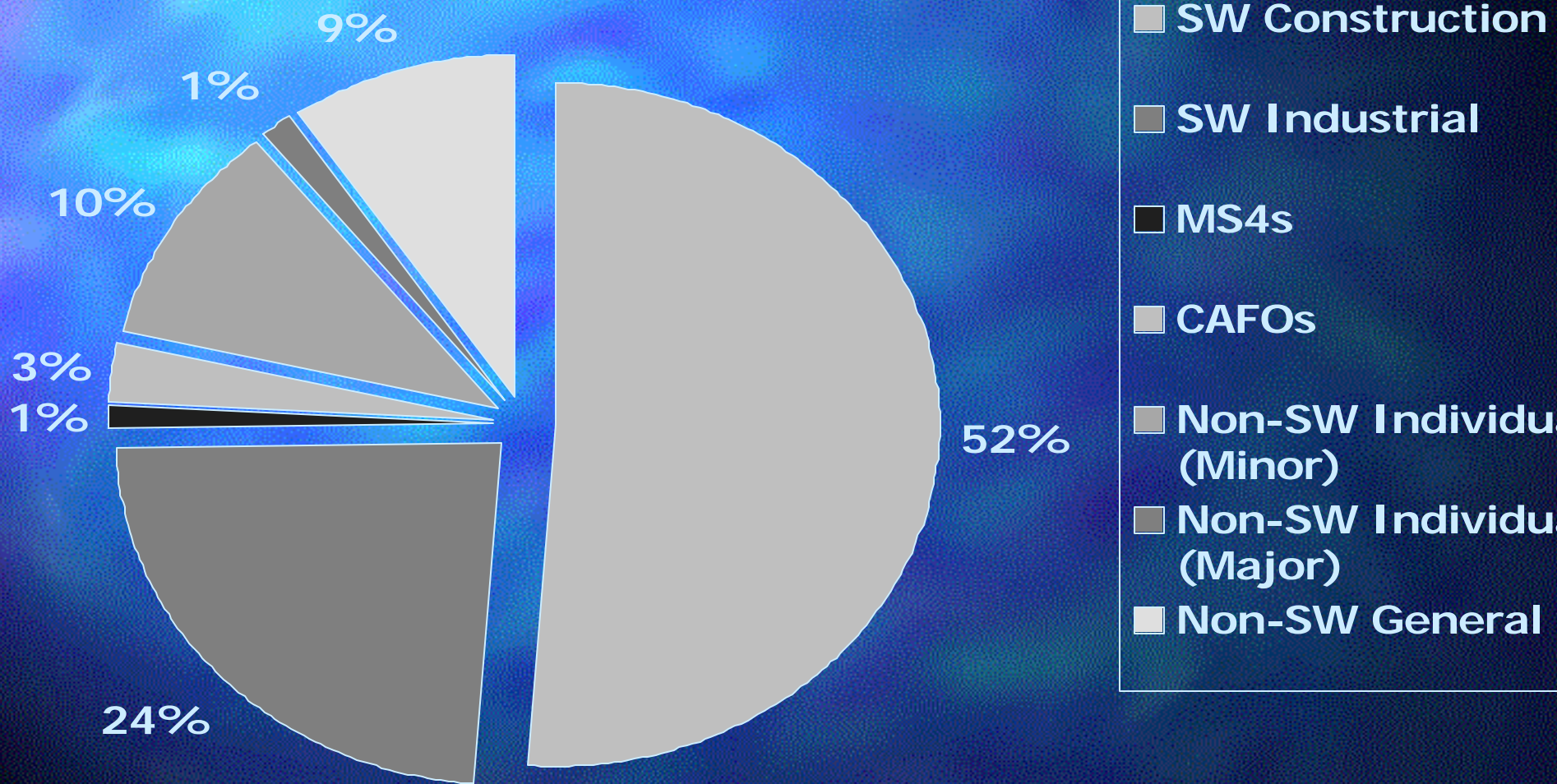
- designed or used for collecting or conveying storm water
- not a combined sewer
- not part of a Publicly Owned Treatment Works (POTW)

Phased Approach to Stormwater Regulation:

- Phase I (1990): In general, stormwater permits required for
 - Ten industrial categories plus:
 - Construction activities disturbing 5 acres or more
 - Medium and Large MS4s (>100,000 population)
- Phase II: phases in by 2003:
 - Construction activities disturbing 1 acre or more
 - Small MS4s (>50,000)

Universe of NPDES Facilities

(including Storm Water Phase I and II)



08/14/01 Storm water facilities represent 75% of NPDES universe! C&U Forum 41

Permitting Framework

Emphasis on pollution prevention

- MS4s:
 - Storm Water Management Plan (SWMP) required
- Industrial and Construction:
 - Storm Water Pollution Prevention (SWP2) Plans required

Stormwater from Colleges & Universities-

Potentially regulated if from a:

- Transportation sector activity
 - Primary SIC Codes 40-45
 - with vehicle maintenance activities
- MS4-if the college owns the stormwater collection system
 - in an urban area (e.g., Phase II regulations list 228 governmental entities in the State of Missouri located fully or partially within urbanized areas greater than 50,000.)
 - may be co-permittee with Cities or Sewer Districts
 - Co-permittees must each apply for a permit but may share a SWMP.
- Construction Activities
 - Phase I: >5 acres of soil disturbed (or part of a larger plan of development)
 - Phase II: > 1 acre of soil disturbed

Permit Requirements for MS4s:

The storm water management program must include:

- Six minimum control measures
- Evaluation/assessment efforts
- Recordkeeping

Who to Contact

State NPDES Programs

■ MDNR:

– Richard Laux (573) 751-6982

■ IDNR:

– Joe Griffin (515) 281-7017

■ KDHE:

– Rance Walker (785) 296-5537

■ NDEQ:

– Jim Yeggy (402) 471-2023

Who to Contact

- EPA Water Resources Center
 - 202.260.7786 (ph)
 - 202.260.0386(fax)
 - center.water-resources@epa.gov
- EPA's Office of Wastewater Management
 - Web Site: www.epa.gov/owm
 - Stormwater: <http://www.epa.gov/owm/sw>
 - Phase II questions: 202.260.5816 or sw2@epa.gov
 - Pretreatment: www.epa.gov/owm/permits/pretreat/pre.htm

EPA Region VII:

- Ralph Summers (913) 551-7418
- summers.ralph@epa.gov

Information Resources for Laboratories:

- **Laboratory Waste Minimization & Pollution Prevention:**
 - www.seattle.battelle.org/services/e&s/p2labman/index2.htm
 - www.umich.edu/~nppcpub/resources/ResLists/chem.html
 - www.silvertech.com/microscale/index.html
- **Environmental Management Guide for Small Laboratories**
 - www.epa.gov/sbo/smalllabguide.htm